

Liability-Driven Investing Strategies Reduce Pension Risk

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Introduction

Pension funds that are currently underfunded on either a going concern or a solvency basis as a result of the unraveling of global capital markets since August 2007 should seriously consider the merits of liability-driven investing to immunize them from future market volatility.

Canadian defined benefit pension funds typically invest 50% to 60% of the fund in publicly traded stocks and the balance in bonds, with a small allocation to alternative investments such as real estate. During 2008, the median pension fund had a rate of return of about -16%. Since funds usually assume they will earn a return of at least 6%, this means the typical fund fell short of its objective by 22% in 2008. Although the current unprecedented financial crisis has impacted all investors, some pension funds that follow a liability-driven investment and funding strategy (LDI) have been more successful in maintaining their funded position. PBI Actuarial Consultants works with a number of negotiated cost multiemployer pension plans (NCMEPP) that follow LDI strategies. The balance of this article is based on the results for these LDI plans compared to the typical pension fund.

How LDI works

LDI begins with the premise that pension fund assets should be invested to earn a return each year equal to or greater than the return required to support the liabilities of the plan. A large portion, or perhaps the entire fund, is invested in bonds and other fixed income investments which match the anticipated liability cash flows over time.

For the typical LDI fund, 70% to 95% of the fund is invested in a fixed income portfolio which matches the projected future liability cash flows of the plan. The balance of the fund is primarily invested in diversified real estate and commercial mortgage portfolios and other return enhancing investments. Many of the funds have a portable alpha overlay designed to increase return without excessive increase in risk. The asset mix for each fund is customized to their situation and risk tolerance, with the higher fixed income weightings providing lower expected risk.

Comparing the median and LDI fund

During 2008, a sample LDI fund had a return of around 0%, versus the median fund return of -16%. Over the years 2002 through 2008, the sample LDI fund compared to the median fund is as follows:

2002 through 2008	Median Fund	Sample LDI Fund
Fund return	3.9%	9.0%
Volatility	11.1%	6.3%
Liability alpha	-7.0%	-1.9%
Tracking error	9.5%	2.2%

In this table:

- Volatility is the standard deviation of annual returns.
- Liability Alpha is the average excess of the annual fund return over the benchmark liability return based on Government of Canada bond yields.
- Tracking error is the standard deviation of Liability Alpha.

In general terms, in 2008 the return of the median fund was hurt mainly by large negative equity returns. The median fund return was helped by the bonds and mortgages in the asset mix and alternative investments such as real estate. During 2008, the sample LDI fund which had less than 5% equities was not affected as much by the meltdown. The LDI fund's fixed income investments performed much better than stocks, but were affected by widening of corporate and provincial yield spreads. The overall return was helped by positive returns from real estate. The portable alpha overlay detracted from the return in 2008, mostly due to negative returns in hedge fund of funds investments. If the LDI fund had invested in Government of Canada bonds during the period, it would have been closer to matching the liability return. However, incorporating provincial and corporate bonds into the asset mix is an important source of extra return over the longer term.

We have estimated that over the seven-year period, the median fund underperformed its liabilities by 7% each year. Underperformance of this magnitude has created unfunded liabilities and solvency deficiencies for many pension plans in Canada. In contrast, over this same period, the sample LDI fund underperformed the required liability return by 1.9% per year, with most of the underperformance coming in 2008. A part of the return from the LDI strategy over the 2002 through 2008 period has come from a decline in bond yields to recent lows. If bond yields stabilize, this source of return won't assist in the future, but a narrowing of yield spreads will increase the return for the sample LDI fund. If bond yields rise in the future, which could occur once the current recession ends and inflation starts to rise again, the LDI fund return will be reduced, due to the long duration of the bond portfolio. But, in terms of assets and liabilities, the LDI fund will continue to perform well and protect the funded position as designed.

LDI compared to a typical investment policy

The majority of Canadian pension funds do not use an LDI strategy. Instead, with their advisors they develop investment policies which mandate that a high percentage of assets (typically 50% to 60%) be allocated to Canadian and foreign equities with the balance of the fund invested in short- to mid-term bonds.

Although equities are expected to outperform bonds over longer time periods, they are volatile. There is nothing wrong with a pension plan investing in equities, as long as the plan sponsor can accept the risk of short-term returns being below the liability return.

However, for negotiated cost multiemployer pension plans, funding shortfalls which could arise if fund returns are lower than expected may lead to benefit cuts for plan beneficiaries, as it can be very difficult to increase contributions rapidly to address funding shortfalls.

Reducing the variance between asset and liability returns is a key objective of an LDI strategy which in turn provides high benefit security for plan beneficiaries. An LDI strategy will not guarantee that solvency deficiencies or unfunded liabilities won't arise, but the strategy can make such deficiencies much less likely.

Is it too late to adopt an LDI strategy?

No, but moving to an LDI strategy quickly for a plan with a current funding shortfall could lock in the deficit and require a contribution increase or benefit reduction. An investment policy with high allocations to equities usually means the actuary can use a higher interest rate to value the liabilities because of the assumed equity risk premium (resulting in lower liabilities and a better funded ratio). In contrast,

implementing LDI could require a lower interest rate assumption for valuing liabilities because of the lower expected return on the bonds in the portfolio.

The realities of LDI may require plan sponsors to phase in the move towards LDI. For example, changing the bonds in the fund to match the duration of the liabilities without changing the equity weighting will improve liability tracking but not result in a significantly lower interest rate being used by the actuary. As the financial condition of the plan improves over time, the move to LDI would continue by reducing equities and increasing liability matching bonds in the asset mix. The alternative of sticking with the current investment policy leaves the plan exposed to further risk of the effect of lower bond yields and poor equity returns. Recovery from the current recession could be slow and equity returns could remain low for an extended period of time. LDI can also be phased in over time by applying the strategy to a portion of the plan's liabilities (i.e., retired lives) and directing future contributions towards additional fixed income investments that are more closely matched in terms of duration to the liabilities.

Reducing equities and adding alternative investments such as real estate and infrastructure can also be part of the move to LDI. Such investments can help reduce risk without reducing return, providing good returns with low correlation to stock markets.

However, even with the suspension of solvency funding in some jurisdictions, many NCMEPPs will still have going concern unfunded liabilities that will force benefits cuts or contribution increases. In these circumstances implementing LDI at the same time can ensure, with a high degree of certainty, that only one cut will be required. The same cannot be said of maintaining a portfolio heavily invested in equities. Although an LDI pension fund may realize lower returns than where there is an asset allocation heavily weighted to equities, the returns should also be more stable. Furthermore, over time, returns will match the returns required to match the change in the liabilities and provide a high level of security for plan beneficiaries. With LDI, the focus shifts from the rate of return, and how it compares to other funds, to stability of the net funded position.

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LDI Key Points

Adoption of an LDI strategy involves some or all of the following changes to investment policy:

More bonds and longer bonds

- Increase the portion of the fund allocated to bonds and other fixed income investments and lengthen the duration of the fixed income portfolio to be closer to the liability duration.
- The duration of most pension liabilities can range from around 12 years to over 30 years depending on how mature the plan is. To match the liabilities requires a much longer bond duration than is found in a typical portfolio. For the closest match, and the lowest volatility relative to liabilities, the entire portfolio would be a cash flow matching fixed income portfolio.

Reduce stocks

- Reduce the amount of the fund allocated to stocks. Having a portion of the fund in stocks can increase expected fund return, but the stock allocation must consider the plan's ability to withstand periods of negative equity returns.

Add alternative investments

- Real estate and infrastructure investments with a stable long-term income stream can increase the expected return without disrupting the liability matching strategy.

Add portable alpha

- Adding an overlay strategy of absolute return investments (with stable returns) can improve the total fund's expected return.



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Tony Williams has over 30 years of pension, investment and benefits industry experience. He has provided consulting advice to many prominent organizations in the private sector and public sector in Western and Central Canada. He specializes in actuarial and investment consulting for retirement plans including retirement plan design and funding, investment policy development, asset /liability modeling and implementation of investment manager structures.

Tony is a founder and President of PBI Actuarial Consultants of Vancouver, BC. Immediately prior to forming PBI in 2007, he was Retirement Practice Leader, Western Canada with Watson Wyatt Worldwide. From 1980 until 2003 he held senior actuarial consulting and management positions with several major international human resource consulting firms in their Calgary and Toronto offices. Between 1977 and 1980, he worked in Winnipeg for a life insurance company and a regional pension consulting firm.

Tony holds a B.Sc. (Honours) in Actuarial Mathematics from the University of Manitoba, graduating in 1977. He is a Fellow of the Society of Actuaries and a Fellow of the Canadian Institute of Actuaries and became fully qualified in 1985.